

We claim:

1. A computerized method for maintaining volume configuration data associated with a logical volume, the method comprising:

5        setting a volume epoch identifier to an initial value;

          copying the volume epoch identifier to a data structure on each on-line extent associated with the logical volume; and

          modifying the volume epoch identifier on the data structure on each on-line extent of the logical volume upon a change to a configuration of the logical volume.

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2. The computerized method of claim 1, wherein modifying the volume epoch identifier comprises incrementing a current value of the volume epoch identifier.

3. The computerized method of claim 1, further comprising:

15        copying the volume epoch identifier to a data structure maintained by a cluster services component after the volume epoch identifier has been initialized; and

          modifying the volume epoch identifier on the data structure maintained by the cluster services component upon a change to a configuration of the logical volume.

4. A computerized method for determining the status of a logical volume configuration,  
the method comprising:

reading an epoch value from each extent of the logical volume;

5 comparing the epoch value from each extent of the logical volume; and

determining a configuration status based on the comparison of the epoch value from  
each extent of the logical volume.

5. The computerized method of claim 4, wherein determining a configuration status

10 indicates the logical volume can be exposed when the epoch values from each extent are  
equal.

6. The computerized method of claim 4, wherein determining a configuration status  
indicates the logical volume can be exposed when the epoch values from each extent are equal

15 to an epoch valued maintained by a cluster system component.

7. The computerized method of claim 6, wherein the logical volume comprises a  
mirrored volume having at least a first extent and a second extent, and wherein determining a  
configuration status indicates the logical volume can be exposed when the epoch value from

20 the first extent matches the epoch value maintained by a cluster system component.

8. A computerized system comprising:

a computer comprising a processor, a memory, and a computer-readable medium  
operatively coupled together;

an operating environment executing in the processor from the computer-readable  
5 medium;

a logical volume manager operative to control the configuration of at least one disk of  
a disk storage system, said disk having at least one volume, said volume having at least one  
extent; and

wherein the logical volume manager maintains on the at least one extent a volume data  
10 structure having a volume epoch number and wherein logical volume manager modifies the  
volume epoch number upon a change in a configuration of the volume.

9. The computerized system of claim 8, wherein the volume epoch number is modified  
by incrementing a current value of the volume epoch number.

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10. The computerized system of claim 8, wherein the volume manager determines the  
status of a volume by comparing the volume epoch numbers on each of the extents of the  
volume.

20 11. The computerized system of claim 8, wherein logical volume manager determines the  
status of a volume by comparing the volume epoch numbers on each of the extents of the

volume.

12. The computerized system of claim 8, further comprising a cluster system component operative to maintain a data structure having a volume epoch number that is modified upon a  
5 change to the volume configuration.

13. The computerized system of claim 12, wherein the logical volume manager determines the status of a volume configuration by comparing the epoch number on the data structure maintained on the extent with the epoch number on the data structure maintained by the  
10 cluster system component.

14. A computer-readable medium having computer-executable instructions for performing a method for managing a configuration of a logical volume, the method comprising:  
setting a volume epoch identifier to an initial value;  
15 copying the volume epoch identifier to a data structure on each on-line extent associated with the logical volume; and  
modifying the volume epoch identifier on the data structure on each on-line extent of the logical volume upon a change to a configuration of the logical volume.

20 15. The computer-readable medium of claim 14, wherein modifying the volume epoch identifier comprises incrementing a current value of the volume epoch identifier.

16. The computer-readable medium of claim 14, further comprising:  
copying the volume epoch identifier to a data structure maintained by a cluster services  
component after the volume epoch identifier has been initialized; and  
5 modifying the volume epoch identifier on the data structure maintained by the cluster  
services component upon a change to a configuration of the logical volume.
17. A computer-readable medium having computer-executable instructions for performing  
a method for determining a status of a logical volume configuration, the method comprising:  
10 reading an epoch value from each extent of the logical volume;  
comparing the epoch value from each extent of the logical volume; and  
determining a configuration status based on the comparison of the epoch value from  
each extent of the logical volume.
- 15 18. The computer-readable medium of claim 17, wherein determining a configuration  
status indicates the logical volume can be exposed when the epoch values from each extent are  
equal.
19. The computer-readable medium of claim 17, wherein determining a configuration  
20 status indicates the logical volume can be exposed when the epoch values from each extent are  
equal to an epoch valued maintained by a cluster system component.

20. The computer-readable medium of claim 19, wherein the logical volume comprises a mirrored volume having at least a first extent and a second extent, and wherein determining a configuration status indicates the logical volume can be exposed when the epoch value from  
5 the first extent matches the epoch value maintained by a cluster system component.